



Polycystic Ovary Syndrome and Its Impact on Women's Quality of Life

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ABSTRACT

Introduction: Polycystic Ovary Syndrome (PCOS) is a major endocrine disorder in women affecting their Health-related Quality of Life (HRQOL) and their mental well-being as well.

Aim & Objective: The current study aimed to access the Quality of life of women diagnosed with Polycystic Ovary Syndrome.

Methodology: A prospective, cross sectional, questionnaire based HRQOL study was conducted among PCOS women aged between 18 - 45. Of 262 responses, 253 responses who were willing to participate in the study were included. The Polycystic Ovary Syndrome Questionnaire (PCOSQ) was used to assess the HRQOL among PCOS women.

Results: Overall 57.71% of the participants were aged between 18 to 25 years of age. Among the five major domain, highest score was observed in Body hair (4.35 ± 1.4) and the lowest score was observed in Body weight (3.43 ± 1.21). The comparison of the mean score of PCOSQ among age groups, significant difference was observed among Body weight ($p=0.01$), Infertility ($p=0.001$) and body hair (0.04) in 18 – 25 years age group. There is a significant difference in HRQOL among marital status of women in terms of Infertility ($p=0.002$), Body weight ($p=0.04$) and Emotion ($p=0.02$). HRQOL among the socioeconomic status showed that there is a significant difference in Menstrual issues ($p=0.04$), infertility ($p=0.047$), emotional (0.04) PCOSQ domain.

Conclusion: HRQOL is significantly reduced in PCOS women. Currents study data suggested that infertility, emotions, and body weight all had a significant impact on the HRQOL of women with PCOS. Overall, PCOS reduces the QOL, which needs to be assessed periodically.

Key Words: PCOS, Quality of life, Women, HRQOL, Body weight, Body hair

INTRODUCTION

Ovary Syndrome (PCOS) is a significant endocrine disorder in women, and has a greater impact on both the mental and physical aspects of Health-related Quality of Life (HRQOL).^{1,2} PCOS is one of the most common endocrine disorders in women of reproductive age that has substantial psychological, social, and economic consequences disorders affecting about 6-8% of women in their reproductive years.³ It is associated with biochemical, hormonal, reproductive (Menstrual Irregularity and Infertility), Metabolic and Psychological consequences resulting in reduced Quality of Life (QOL).^{4,5,6,7} It has a significant effect on women, resulting in diminished quality of life, altered family identity, dysfunction in the family and work environment.⁸ Worldwide, the prevalence of PCOS in women aged 17 to 45 years is estimated to be between 5.5% and 12.6%.⁹ In India the prevalence of PCOS ranges from 3.7 to 22.5%

depending on the population studied and the criteria used for diagnosis.¹⁰

PCOS is a heterogeneous condition with varied signs and symptoms that include amenorrhoea, oligomenorrhoea, hirsutism, obesity, subfertility, anovulation and acne. Any of these symptoms can significantly affect the female's quality of life.¹¹ The greatest negative influences on quality of life were associated with hirsutism (especially under the age of 25 years old), being overweight, and infertility concerns (over age 25).¹² Signs and symptoms of the disorder typically arise during puberty; however, it may not be recognised until maturity in some cases.¹³ PCOS accounts for 95% of cases of hyperandrogenism, 20% of all cases of amenorrhoea and up to 75% of all cases of anovulatory infertility.¹⁴ The treatment of PCOS proves to be effective if it can reduce the burden of these symptoms as well as the associated psychological distress and thus improve health-related quality of life (HRQL).

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There are several clinical presentations associated with PCOS, such as hirsutism, acne, overweight/obesity, hair loss/ androgenic alopecia, oligomenorrhea, amenorrhea and infertility and can lead to mood disturbances, affect the emotional wellbeing as well as sexual satisfaction of women, and cause a reduction in the HRQOL of patients.^{15,16} The main causes of psychological morbidity include obesity, clinical hyperandrogenism (acne, hair loss), and infertility.¹⁷⁻¹⁹ Many research have looked at the HRQOL of women with PCOS; however, there is little information available on the HRQOL of Indian women with PCOS.^{20,21} It has been recognized that clinical representations of PCOS vary with culture and ethnicity,²² and may thus have different impacts on HRQOL. Several studies have reported that the lowering mean value in all the domains shows the poor quality of life in women with PCOS. Systematic reviews have conclusively demonstrated that the physical indications and clinical symptoms of PCOS are connected with a low quality of life.^{23,24} Even though many study were conducted on PCOS, is a paucity of study, which focused on the Quality of life of individuals with polycystic ovary syndrome in India. Thus, the proposed study focused to access the Quality of life of women diagnosed with Polycystic Ovary Syndrome.

METHODOLOGY

This prospective, cross sectional, questionnaire based HRQOL study was conducted between October 2022 and December 2022. The online-based survey was preferred to ensure timely, comprehensive, and high-yield data acquisition and analysis. Women Diagnosed with PCOS aged between 18-45 Years were included in the study and women with major illness that substantially influenced their Quality of Life like confirmed malignancy and deformities and breastfeeding women are excluded for this survey. Prior to the conduct of the study, the ethical approval was obtained from Institutional Ethical Committee (AMH-DNB-070/10-22), Apollo Hospitals, Chennai.

A questionnaire was prepared using Google Forms and were shared through various social media platforms. Females with PCOS and who understand the contents of the questionnaire and willing to participate in the study were included. All the participants were well informed pertaining the study objectives, duration of participation, declaration of confidentiality and the voluntary participation before administration of the questionnaire. We deployed a snowball sampling technique, a non-probability sampling method which yields a convenient sample. The participants aged 18 and above were included in the study and were representing different socio-demographic variables like age, gender and socio-economic status. The socioeconomic status was calculated using Kuppuswamy scale (2021).²⁵ Descriptive statistics was used. A total of 262 responses was received perhaps certain responses

were excluded as they are duplicate and invalid entries, and the final data includes was 253 responses.

The questionnaire consists of the following sections: the first section includes demographic and anthropometric details which included socio demographic, socio- economic characteristics, dietary habits, Age of menarche, age of PCOS diagnosed and children status were recorded accordingly. The socioeconomic status was calculated using Kuppuswamy scale (2021).¹³ The second section includes PCOS questionnaire, it is validated questionnaire to access the Health-related quality of life specific for PCOS individuals.^{26,15} It is 26-item questionnaire, focused on five major domains Body hair (5 item), Emotion (8 – item), Body weight (5 item), infertility (4- item) and menstrual issues (4- item).⁸ Patients rated the symptoms on a scale of 1–7, in accordance with the PCOSQ with 7 being worst (symptoms all of the time) and 1 best (symptoms none of the time). The baseline characteristics of the participants were presented as frequency and percentages. ANOVA was employed to compare the continuous variable between two or more categories. The data was analysed using SPSS version 22.0 (IBM). P value ≤ 0.05 was considered statistically significant for all analyses.

RESULTS

Among the study population majority of the participants were aged between 18 to 25 (57.71%) years of age followed by 26-35 years (34.39%). About 50.9% of the responders were on mild exercise pattern followed by 42.69% on moderate exercise pattern. In relation to dietary pattern, about 45.5% were on non-vegetarian diet followed by occasional non-vegetarian (43.48%). About 82.69% were eating junk foods and among them nearly 5.48% were taking junk food on twice a week. Majority were on the irregular (54.94%) menstrual history and were unmarried (57.71%). The study finding showed that that 42.29% of PCOS responders were married, even though there is a delayed and irregular Menstrual history they conceived 42.06 % conceived and had one child and 38.32% had more than 2 child and only 19.63% with no children. The medical history details showed that 62.06% of the responders got the menarche less than 14 years of age and 54.94% were with irregular menstrual history and 70.75% were diagnosed with PCOS at the age of 18 – 25 years. Further, 19.63 % had no child and 37.38% had miscarriage (Table 1). According to Kuppuswamy scale (2021) the Socioeconomic status was calculated and majority of the study participant belongs to upper Middle socioeconomic status (65.21%), followed by Lower middle (22.13%), Upper Lower (6.71%) and upper (5.92%) (Table 2).

In the present study, the HRQOL questionnaire scores based on PCOSQ was presented in Table 3. Among the five major domain, highest mean score was observed in Body Hair

(4.35±1.41), followed by Menstrual issues (4.05±1.29), Infertility (3.80±1.01), Emotion (3.60±0.93) and Body Weight (3.43±1.21). The highest score was observed in Body hair domain and the lowest score was observed in Body weight. The comparison of the mean score of PCOSQ among age groups, the domains Body weight ($p=0.01$), Infertility ($p=0.001$) and body hair ($p=0.04$) showed high PCOSQ score in 18 – 25 years age group and showed significant difference among the various age group (Table 4).

The mean score of PCOSQ and marital status among PCOS responders was showed in Table 5. There is a significant difference in HRQOL among marital status of women in terms of Infertility ($p=0.002$), Body weight ($p=0.04$) and Emotion ($p=0.02$). The non-significance was observed in terms of Menstrual issues ($p=0.847$) and body hair ($p=0.430$). The comparison of HRQOL among the socioeconomic status showed that there is a significant difference in Menstrual issues ($p=0.04$), infertility ($p=0.047$), emotional ($p=0.04$) PCOSQ domain, with higher score in Upper middle socioeconomic class. The body weight and Body hair doesn't show any significant difference (Table 6).

DISCUSSION

The current study finding focused on the HRQOL among PCOS individuals. Earlier studies focused on the PCOS cannot able to reveal the Quality of life among the PCOS individuals. The current study highlighted the dietary habits of the PCOS individuals. In the current study 42.29% of PCOS responders were married, in spite of the delayed and irregular menses 42.06 % conceived and had children. Among the five major domain in PCOSQ, lowest score was observed in Body weight, followed by emotions and infertility. This indicate worsening of Quality of life among PCOS individuals. The purpose of this study was to measure HRQOL in PCOS women. PCOS is a big problem among young women, with symptoms that vary greatly among affected people, as well as psychological stress.^{27,28} The demographic statistics show a higher proportion of PCOS cases at a young age, primarily between the ages of 18 and 25, indicating a higher prevalence of PCOS cases in recent years and the effects of our changing lifestyle on disease incidence. Sedentary lifestyle has a significant impact on the development of PCOS, which may be caused by endocrine changes.²⁹

Previous studies revealed that illiteracy is worse in rural Indian communities than in urban ones,³⁰ which is consistent with our findings, which show a higher literacy rate in urban populations than in rural populations. However, it contradicts the findings of Golboni et al. in terms of educational status and its relationship to disease awareness.³¹ The study finding also revealed that some women with PCOS came from a professional background, whereas the majority were

either students or housewives.³² Because a higher percentage (42.2%) of PCOS cases were married, delayed and irregular menstrual cycles, as well as a desire to have a child. Earlier studies emphasized that nearly 99% of PCOS cases had a delayed or irregular menstrual cycle and sought therapy out of concern of infertility.³³ Motherhood has a significant impact on women's identity and social acceptance after marriage. As a result, infertility has historically been regarded as the leading cause of psychological suffering (Infertility stress). The PCOS responders were well-educated and these women did not rely solely on vegetables; they had a variety of eating habits and ate a varied diet.³⁴ This is in line with our findings that the average percentage (50%) of PCOS cases also consumed junk meals once or twice a week. Sedentary lifestyle and varied eating habits may all contribute to PCOS development and poor HRQOL in PCOS patients. Many studies^{35,36} suggest that therapies concentrating on lifestyle changes or medication treatments may assist to enhance HRQOL in women with PCOS.

The emotional and infertility had very low scores when compared to a menstruation problem, body weight, and body hair across all five PCOSQ domains. This is in line with the previous study stating that the reason for infertility and the stress associated with seeking PCOS therapy.³⁵ The current study heightened that the body hair, body weight, and an irregular menstrual cycle had lesser effects on HRQOL in PCOS individuals, causing less psychological stress than infertility and emotions. In addition, marital status had a significant impact on HRQOL in terms of infertility, emotions, and body weight rather than body hair and menstrual problems.³⁷ According to the previous studies, educational status had no effect on any domain of HRQOL in PCOS. Overall, social, cultural, and ethnic distinctions have a significant impact on various dimensions of HRQOL can be measured separately.^{21,38} Based on earlier reports, menstrual abnormalities have a significant impact on QOL in PCOS patients.^{39,40} It should be emphasised that this study did not look at any biological links between PCOS and HRQOL. The future research can focus on the links between HRQOL and PCOS.

CONCLUSION

The current finding supports that the women with PCOS have lower HRQOL. As PCOS is a chronic and prevalent among women in reproductive age, it may be necessary to assess HRQOL as routine clinical practice. PCOS from various socioeconomic backgrounds were included in our study. In general, current study data suggested that infertility, emotions, and body weight all had a significant impact on the HRQOL of women with PCOS. Overall, PCOS reduces the QOL, which needs to be assessed periodically. Especially for the younger age group, it has to be covered as part of annual check. The women in the early reproductive age could

be benefited from medical and psychological interventions to improve their quality of life.

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Authors' Contribution

Deepthi Sowmya S and Selvalakshmi A involved in the literature search, conduct of the study, data collection and analysis, and draft manuscript preparation. Hilda Solomon involved in study concept and manuscript preparation. Jayanthi Swaminathan and Anitha Rani involve in study concept, manuscript reviewing, editing and final approval of the manuscript.

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Table 1: Demographic characteristics of the study population:

S. No	Characteristic	N (%)
	Age	18 – 25
		146 (57.71%)
	26 – 35	87 (34.39%)
	36 – 45	20 (7.91%)
Education	Illiterate	2 (0.79)
	Primary School	Nil
	Middle school	3 (1.19)
	High school	17 (6.72)
	Intermediate/ diploma	17 (6.72)
	Graduation	170 (67.19)
	Professional	44 (17.39)
Exercise pattern	Mild	129 (50.99%)
	Moderate	108 (42.69%)
	Heavy	16 (6.32%)
Dietary Habits	Non-Vegetarian	116 (45.58%)
	Occasional non - vegetarian	110 (43.48%)
	Pure Vegetarian	29 (11.46%)
Eating Junk foods	Yes	208 (82.21%)
	No	45 (42.69%)
Frequency of Junk Foods	Daily	43 (20.67%)
	Occasionally	39 (18.75%)
	1 – 2 times a week	105 (50.48%)
	Once in a month	21 (10.10%)
Age of Menarche	Less than 14	157 (62.06%)
	More than 14	108 (37.94%)

Table 1: (Continued)

S. No	Characteristic	N (%)
Age of Diagnosis of PCOS	18 – 25	179 (70.75%)
	26 – 35	71 (28.06%)
	36 – 45	3 (1.19%)
Menstrual History	Irregular	139 (54.94%)
	Regular	114 (45.06%)
Marital status	Married	107 (42.29%)
	unmarried	146 (57.71%)
Children status	1 Child	45 (42.06%)
	More than 1 child	41 (38.32%)
	No children	21 (19.63%)
Miscarriage	Yes	40 (37.38%)
	No	67 (62.62%)

Table 2: Socio Economic status

S. No.	Socioeconomic Class	Score	N=253
1	Upper (I)	27.4 ± 0.8	15 (5.92%)
2	Upper Middle (II)	18.98 ± 2.16	165 (65.21%)
3	Lower Middle (III)	9.23 ± 1.11	56 (22.13%)
4	Upper lower (IV)	13.05 ± 1.48	17 (6.71%)
5	Lower (V)	nil	nil
Over all			
6	Upper Middle (II)	17.51 ± 4.45	

Table 3: Mean score of all items in PCOSQ scale among study population.

PCOSQ Domain		Score Mean ± SD
Body hair	Growth of visible hair on the chin?	3.91 ± 1.86
	Growth of visible hair on the face?	4.45 ± 1.72
	Growth of visible hair on upper lip?	
	Embarrassment about excessive body hair	4.54 ± 1.75
	Growth of visible body hair?	4.46 ± 1.85
	Over all	4.35 ± 1.41
	Depressed as result of having PCOS?	3.2 ± 1.74
	Easily tired?	3.47 ± 1.89
	Moody as result of having PCOS?	3.49 ± 1.79
	Had low self-esteem as a result of having PCOS?	3.5 ± 1.75
Emotion	Felt frightened of getting cancer?	4.25 ± 1.58
	Worried about having PCOS?	3.73 ± 2.01
	Self-conscious as a result of having PCOS?	3.49 ± 1.8
	Late menstrual periods?	3.67 ± 1.76
	Over all	3.60 ± 0.93

Table 3: (Continued)

PCOSQ Domain		Score Mean $\pm$ SD
Body weight	Have difficulties staying at ideal weight?	2.9 $\pm$ 1.86
	Concerned about being overweight?	3.48 $\pm$ 1.86
	Had trouble dealing with weight?	3.72 $\pm$ 1.96
	Felt frustration in trying to lose weight?	3.74 $\pm$ 1.85
	Feel like you are not sexy because of being overweight?	3.32 $\pm$ 1.98
	Over all	3.43 $\pm$ 1.21
Infertility	Felt afraid of not being able to have children?	4.08 $\pm$ 1.6
	Feel sad because of infertility problems?	3.9 $\pm$ 1.6
	Feel lack of control over the situation with PCOS?	3.52 $\pm$ 1.7
	Concerned with infertility problems?	3.68 $\pm$ 1.6
Menstrual Issues	Over all	3.80 $\pm$ 1.01
	Headaches?	4.12 $\pm$ 1.8
	Irregular menstrual periods?	3.69 $\pm$ 1.7
	Abdominal bloating	4.24 $\pm$ 1.7
	Menstrual cramps	4.14 $\pm$ 1.8
	Over all	4.05 $\pm$ 1.29

Table 4: Comparison of the Mean Score of PCOSQ among Age Groups

S. No	Domain	Age 18 - 25	Age 26 - 35	Age 36 - 45	p- value
1	Menstrual issues	3.96 $\pm$ 1.31	4.06 $\pm$ 1.26	4.6 $\pm$ 1.2	0.125
2	Infertility	3.9 $\pm$ 1.06	3.89 $\pm$ 0.86	3.7 $\pm$ 1.16	0.001*
3	Body Weight	4.37 $\pm$ 1.11	3.54 $\pm$ 1.25	3.43 $\pm$ 1.59	0.01*
4	Emotion	3.61 $\pm$ 0.95	3.54 $\pm$ 0.922	3.83 $\pm$ 0.81	0.440
5	Body Hair	4.2 $\pm$ 1.42	3.80 $\pm$ 1.36	3.87 $\pm$ 1.36	0.042*

Table 5: Comparison of the Mean Score of PCOSQ among marital status

S. No	Domain	Married	Unmarried	p- value
1	Menstrual issues	3.85 $\pm$ 1.28	3.79 $\pm$ 1.2	0.847
2	Infertility	4.68 $\pm$ 0.97	3.21 $\pm$ 1.04	0.002*
3	Body Weight	4.26 $\pm$ 1.11	3.36 $\pm$ 1.27	0.044*
4	Emotion	4.45 $\pm$ 0.92	3.71 $\pm$ 0.93	0.024*
5	Body Hair	4.27 $\pm$ 1.40	4.41 $\pm$ 1.42	0.430

Table 6: Comparison of the Mean Score of PCOSQ among Socioeconomic class

S. No	Domain	Upper(I)N=15	Upper Middle (II) N=165	Lower Middle (III) N=56	Upper lower (IV) N=17	p- value
1	Menstrual issues	3.55 $\pm$ 1.18	4.19 $\pm$ 1.4	3.05 $\pm$ 1.2	4.13 $\pm$ 1.6	0.04*
2	Infertility	3.93 $\pm$ 0.9	4.2 $\pm$ 1.01	3.16 $\pm$ 1.16	3.68 $\pm$ 0.95	0.047*
3	Body Weight	3.70 $\pm$ 1.87	4.36 $\pm$ 1.09	3.55 $\pm$ 1.3	3.49 $\pm$ 1.3	0.051
4	Emotion	3.6 $\pm$ 1.1	4.56 $\pm$ 0.90	3.91 $\pm$ 0.96	3.60 $\pm$ 1.06	0.04*
5	Body Hair	4.22 $\pm$ 1.6	4.37 $\pm$ 1.3	4.23 $\pm$ 1.5	4.7 $\pm$ 1.42	0.505